

ABSTRACT

The polarization instability inherent in laterally-oxidized VCSELs may be mitigated by employing an appropriately-shaped device aperture, a misoriented substrate, one or more cavities or employing the shaped device aperture together with a misoriented substrate and/or cavities. The laterally-oxidized VCSELs are able to operate in a single polarization mode throughout the entire light output power versus intensity curve. Combining the use of misoriented substrates with a device design that has an asymmetric aperture that reinforces the polarization mode favored by the substrate further improves polarization selectivity. Other device designs, however, can also be combined with substrate misorientation to strengthen polarization selectivity.